REMARKS

The Applicant thanks the Examiner for the thorough consideration given the present application. No new matter is believed to be added to the application by this amendment.

Status of the Claims

Claims 1, 6, 7, 9-11 and 14-15 and 18-24 are pending in this application. Claims 1 and 14 are independent. Claims 1 and 14 have been amended to clarify the language, and these amendments find support at page 6, lines 16-20 of the specification. Claims 10 and 15 have been amended to improve their language without changing their scope. Claims 18-22 find support at page 7, lines 16-18 of the specification. Claim 23-24 find support at page 8, lines12-19 of the specification.

Rejection Under 35 U.S.C. §103(a)

Claims 1, 6, 7, 9-11, 14 and 15 are rejected Under 35 U.S.C. §103(a) as being obvious over the Applicant's disclosure in view of Katsuto (JP 5-323324) and Mishina (U.S. Patent No. 5,954,999). Applicant respectfully traverses.

The Present Invention and its Advantages

The present invention pertains to a method of manufacturing a liquid crystal display in which an alignment layer is formed by baking an alignment material. After the liquid crystal is injected, the cell is annealed at a heating temperature that is substantially equal to the baking temperature of the alignment layer. This inventive technology results unexpectedly in achieving a uniform reduction of the tilt angle, as is shown in Figure 5.

The invention finds a typical embodiment in claim1:

> 1. A method of manufacturing a liquid crystal display comprising the steps of:
>
> forming a liquid crystal cell including the steps of:
>
> providing an upper substrate and a lower substrate;
>
> forming an alignment layer on at least one of the upper and lower substrates, said alignment layer being formed by coating with an alignment material and baking at a baking temperature;
>
> forming a sealant on at least one of the upper and lower substrates;
>
> laminating the upper and lower substrates; and
>
> injecting a liquid crystal layer between the upper and lower substrates;
>
> heating the liquid crystal cell, wherein the heating step is performed at a heating temperature which is substantially equal to the baking temperature of the alignment layer, to form a uniform tilt angle of the alignment layer; and
>
> quickly cooling the liquid crystal cell.

Distinction of the Invention Over the Applied Art

The Examiner turns to the Applicant's own disclosure for teachings pertaining to forming a liquid crystal cell and heating temperature. However, the specification at page 3, on which the Examiner relies, describes the related art that the invention supercedes. There has been no admission of prior art by the Applicants. Utilizing this description to allege prior art without an admission of prior art is improper. See Riverwood International Corp. v. R.A. Jones & Co., Inc., 324 F.3d 1346, 66 U.S.P.Q.2d 1331 (Fed. Cir. 2003).

Further, the Applicant used the disclosure in the specification's Discussion of the Related Art section to describe the problem that the invention solves. The disadvantages of the related art include abnormal alignment arising from impurities, as is discussed at page 4, lines 11-14 of the specification. As a result, one having ordinary skill would not be motivated to use the teachings of the specification's Discussion of the Related Art section.

In In re Nomiya, the CCPA determined that even if there has been an admission of prior art, this admission of prior art will still not render an invention obvious if it points out the source of the problem that the invention solves.

> It should not be necessary for this court to point out that a patentable invention may lie in the discovery of the source of a

> problem even though the remedy may be obvious once the source of the problem is identified. This is ***part*** of the "subject matter as a whole" which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103. In re Antonson, 47 CCPA 740, 272 F.2d 948, 124USPQ 132; In re Lennert, 50 CCPA 753, 309 F.2d 498, 135 USPQ 307. The court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into that art appellant's teachings. In re Murray, 46 CCPA 905, 268 F.2d 226, 122 USPQ 364; In re Sporck, 49 CCPA 1039, 301 F.2d 686, 133 USPQ 360. The issue, then is whether the teachings of the prior art would, ***in and of themselves and without the benefits of the appellant's disclosure***, make the invention as a whole, obvious. In re Leonor, 55 CCPA 1198, 395 F.2d 801, 158 USPQ 20. (Emphasis in original) In re Nomiya 509 F.2d 566, 571, 184 U.S.P.Q. 607, 612 (C.C.P.A. 1975).

In this case there has been no admission of prior art. Even if one assumes *arguendo* that the subject matter discussed in Discussion of the Related Art is prior art, this disclosure depicts the problem that the invention solves. These teachings therefore cannot be used to provide motivation to combine references.

> If, as appellants claim, there is no evidence of record that a person of ordinary skill in the art that the time of the appellant's invention would have expected the problem . . . to exist at all, it is not proper to conclude that the invention which solves this problem, which is claimed as an improvement of the prior art device, would have been obvious to that hypothetical person of ordinary skill in the art. 184 U.S.P.Q. 612, 613.

There is thus no motivation to combine Mishina with the Applicant's own disclosure.

Further, at page 2, line 21 - page 3, line 2 of the Office Action, the Examiner asserts: "It should be noted that the step of forming an alignment layer sealant, laminating an injection [of] a liquid crystal layer would be ***inherent*** to the step of forming the LCD cell." (Emphasis added).

The Federal Circuit stated in In re Robertson, that "to establish inherency, extrinsic evidence must make clear that the missing descriptive matter was necessarily present in the thing described in the reference, and would be so recognized by persons with ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a set of circumstances is not sufficient." In re Robertson, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999).

However, the Examiner has failed to provide evidence pointing out how one of ordinary skill would be cognizant of the process steps the Examiner has read into the Applicant's related art. These limitations therefore also fail to be *prima facie* obvious for this additional reason.

At page 3, lines 3-11 of the Office Action the Examiner admits to the failings of the Applicant's disclosure and turns to Mishina:

> APA fails to disclose the heating step being performed at a temperature which is substantially equal to a baking temperature for the alignment layer. Mishina disclose a baking temperature of the alignment layer can be selected from -5°C to 100°C (col. 4, line 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to bake an alignment layer at 100 °C as shown by Mishina, so as the heating temperature of the APA's LCD cell is

> substantially equal to a baking temperature of the alignment layer in order to product [*sic*] a liquid crystal alignment film which has a high tilt angle and excellent properties of LCD devices (see Technical Field).

That is, by the Examiner's own admission, neither the related art discussed in the Applicant's specification (if it could be used) nor Mishina discloses "a heating temperature which is substantially equal to the baking temperature of the alignment layer, to form a uniform tilt angle of the alignment layer," as is set forth in independent claims 1 and 14 of the invention.

To establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP §2143. In addition, if a reference needs to be modified to achieve the claimed invention "there must be a showing of a suggestion or motivation to modify the teachings of that reference to the claimed invention in order to support the obviousness conclusion." Sibia Neurosciences Inc. v. Cadus Pharmaceutical Corp. 55 USPQ2d 1927 (Fed. Cir. 2000).

In this case, the Examiner has failed to point out where the teaching or suggestion to have substantially equal processing temperatures can be found in the references. Thus, even if the Applicant's own disclosure could be combined with Mishina, this combination would fail to teach or suggest all of the claim limitations of independent claims 1 and 14. A *prima facie* case of

obviousness has thus not been made. Claims depending upon claims 1 and 14 are patentable for at least the above reasons.

Further, the Examiner uses a -5°C to 100°C temperature range from Mishina. However, the invention is not restricted to Mishina's temperature range, as is discussed at pages 7 and 8 of the specification. See also, claims 18 and 21.

Also, even if *prima facie* obviousness could be alleged, the invention shows the unexpected result of a uniform reduction of the tilt angle over the whole alignment layer. This unexpected result thus rebuts any obviousness that can be alleged. See claims 23 and 24.

Yet further, the Examiner turns to Katsuto. However, nowhere in the Office Action does the Examiner point out a basis for including Katsuto in the rejection. Since the Examiner has failed to point out upon what teachings of Katsuto he relies, the rejection fails for this additional reason as well.

In view of the foregoing, reconsideration and withdrawal of the rejections of the claims are respectfully requested. Independent claims 1 and 14 should be in condition for allowance. Since the remaining claims depend either directly or indirectly from allowable independent claims 1 and 14, they should also be allowable for at least the reasons set forth above, as well as for the additional limitations provided by these claims. Accordingly, all pending claims should be in condition for allowance.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By Scott L. Lowe #41,459
James T. Eller, Jr. #39,538

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

0465-0716P
JTE/REG:jls
R. Goozner